

**INFORMATION DISCLOSURE
STATEMENT BY APPLICANT**

(use as many sheets as necessary)

Sheet 1 of 4

10/655,230

Filing Date	September 3, 2003
First Named Inventor	Karim, M. Ziaul
Art Unit	1762 2825
Examiner Name	Unassigned 1. ANYA

Attorney Docket Number A8313/T51200

U.S. PATENT DOCUMENTS+

Examiner Initials*	Cite No. ¹	Document Number Number & Kind Code ² (if known)	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear
JA	A1	US-4,572,841	02-25-1986	Kaganowicz et al.	
	A2	US-5,314,724	05-24-1994	Tsukune et al.	
	A3	US-5,507,881	04-16-1996	Sichanugrist et al.	
	A4	US-5,525,550	06-11-1996	Kato	
	A5	US-5,589,233	12-31-1996	Law et al.	
	A6	US-5,593,741	01-14-1997	Ikeda	
	A7	US-5,614,055	03-25-1997	Fairbairn et al.	
	A8	US-5,621,241	04-15-1997	Jain	
	A9	US-5,629,043	05-13-1997	Inaba et al.	
	A10	US-5,776,557	07-07-1998	Okano et al.	
	A11	US-5,786,039	07-28-1998	Brouquet	
	A12	US-5,807,785	09-15-1998	Ravi	
	A13	US-5,849,455	12-15-1998	Ueda et al.	
	A14	US-5,869,149	02-09-1999	Denison et al.	
	A15	US-5,874,350	02-23-1999	Nakagawa	
	A16	US-5,903,106	05-11-1999	Young et al.	
	A17	US-6,030,666	02-29-2000	Lam et al.	
	A18	US-6,042,901	03-28-2000	Denison et al.	
	A19	US-6,070,551	06-06-2000	Li et al.	
	A20	US-6,071,573	06-06-2000	Koemtzopoulos et al.	
	A21	US-6,074,959	06-13-2000	Wang et al.	
	A22	US-6,077,786	06-20-2000	Chakravarti et al.	
	A23	US-6,096,646	08-01-2000	Lee et al.	
	A24	US-6,106,678	08-22-2000	Shufflebotham et al.	
	A25	US-6,147,009	11-14-2000	Grill et al.	
	A26	US-6,149,976	11-21-2000	Matsuki et al.	
	A27	US-6,149,986	11-21-2000	Shibata et al.	
	A28	US-6,174,808 B1	01-16-2001	Jang et al.	
	A29	US-6,184,158 B1	02-06-2001	Shufflebotham et al.	
	A30	US-6,190,233 B1	02-20-2001	Hong et al.	
	A31	US-6,194,037 B1	02-27-2001	Terasaki et al.	
	A32	US-6,200,412 B1	03-13-2001	Kilgore et al.	
	A33	US-6,224,950 B1	05-01-2001	Hirata	
	A34	US-6,230,650 B1	05-15-2001	Yamazaki	
	A35	US-6,232,196 B1	05-15-2001	Raaijmakers et al.	
	A36	US-2001/0028924 A1	10-11-2001	Sherman	
	A37	US-2001/0033900 A1	10-25-2001	M'Saad et al.	
	A38	US-6,326,064 B1	12-04-2001	Denison et al.	
	A39	US-6,346,302 B2	02-12-2002	Kishimoto et al.	
	A40	US-6,372,291 B1	04-16-2002	Hua et al.	
	A41	US-6,416,823 B2	07-09-2002	Li et al.	

Examiner Signature



Date Considered

11/21/03

*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant. ¹ Applicant's unique citation designation number (optional). ² Kind Codes of U.S. Patent Documents at www.uspto.gov or MPEP 901.04. ³ Enter Office that issued the document, by the two-letter code (WIPO Standard ST.3). ⁴ For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. ⁵ Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST. 18 if possible. ⁶ Applicant is to place a check mark here if English language Translation is attached.

60315945 v1

Substitute for form 1449A/PTO				<i>Complete if Known</i>	
INFORMATION DISCLOSURE STATEMENT BY APPLICANT				Application Number	10/655,230
(use as many sheets as necessary)				Filing Date	September 3, 2003
				First Named Inventor	Karim, M. Ziaul
				Art Unit	1762 2825
				Examiner Name	Unassigned 1- ANYT
Sheet	2	of	4	Attorney Docket Number	A8313/T51200

U.S. PATENT DOCUMENTS+					
Examiner Initials*	Cite No. ¹	Document Number		Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document
		Number	Kind Code ² (if known)		
/A	A42	US-6,465,044	B1	10-15-2002	Jain et al.
	A43	US-2002/0192396	A1	12-19-2002	Wang et al.
	A44	US-6,531,193	B2	03-11-2003	Fonash et al.
	A45	US-6,537,929	B1	03-25-2003	Cheung et al.
	A48	US-2003/0056900	A1	03-27-2003	Li et al.
	A47	US-6,559,026	B1	05-06-2003	Rossman et al.
	A48	US-6,589,610	B2	07-08-2003	Li et al.
	A49	US-6,589,611	B1	07-08-2003	Li et al.
	A50	US-6,596,653	B2	07-22-2003	Tan et al.
	A51	US-6,607,983	B1	08-19-2003	Chun et al.
	A52	US-2003/0159656	A1	08-28-2003	Zhengquan Tan et al.
	A53	US-6,626,188	B1	09-30-2003	Fitzsimmons et al.
	A54	US-2003-0203637	A1	10-30-2003	Zhong Qiang Hua et al.
	A55	US-6,653,203	B1	11-25-2003	Huang et al.
	A56	US-2003/0219540	A1	11-27-2003	Law et al.
	A57	US-6,673,722	B1	01-06-2004	Yamazaki
	A58	US-6,713,390	B2	03-30-2004	M'Saad et al.
/A	A59	US-2004-0146661	A1	07-29-2004	Kapoor, Bikram et al.

FOREIGN PATENT DOCUMENTS						
Examiner Initials*	Cite No. ¹	Foreign Patent Document			Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document
		Country Code ³	Number ⁴	Kind Code ⁵ (if known)		
/A	B1	EP	0 883 166	A2	09-12-1998	
	B2					

Examiner Signature	<i>Angus</i>	Date Considered	1/3/05
--------------------	--------------	-----------------	--------

¹EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant. ²Applicant's unique citation designation number (optional). ³Kind Codes of U.S. Patent Documents at www.uspto.gov or MPEP 801.04. Enter Office that issued the document, by the two-letter code (WIPO Standard ST.3). ⁴For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. ⁵Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST. 16 if possible. ⁶Applicant is to place a check mark here if English language Translation is attached.

60315945 v1

Substitute for form 1449B/PTO				Complete if Known	
INFORMATION DISCLOSURE STATEMENT BY APPLICANT				Application Number	10/655,230
(use as many sheets as necessary)				Filing Date	September 3, 2003
				First Named Inventor	Karim, M. Ziaul
				Art Unit	1762 2825
				Examiner Name	Unassigned I- ANYA
Sheet	3	of	4	Attorney Docket Number	A8313/T51200

NON PATENT LITERATURE DOCUMENTS			
Examiner Initials *	Cite No. ¹	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published.	T ²
IA	C1	Alonso, J.C. et al., "High rate-low temperature deposition of silicon dioxide films..." JVST A 13(6) Nov/Dec 1995, pp. 2924-2929.	
	C2	Bar-Ilan et al., "A comparative study of sub-micron gap filling and planarization techniques", SPIE vol 2636, October 1995, . 277-288.	
	C3	Broomfield et al., "HDP Dielectric BEOL Gapfill: A Process for Manufacturing", IEEE/SEMI Advanced Semiconductor Manufacturing Conference 1996, pp. 255-258.	
	C4	Conti et al., "Processing methods to fill High aspect ratio gaps without premature constriction," DUMIC Conference, Feb. 8-9,1999, pp. 201-209.	
	C5	Horiike et al., "High rate and highly selective SiO2 etching employing inductively coupled plasma and discussion on reaction kinetics", JVST A 13(3) May/Jun 1995, pp. 801-809.	
	C6	Kuo et al., "Thick SiO2 films obtained by plasma-enhanced chemical vapor deposition using hexamethyldisilazane, Carbon dioxide and hydrogen", Journal of The Electrochemical Society, 147 (7) 2000 p. 2679-2684.	
	C7	Lee et al., "Low Temperature Silicon Nitride and silicon Dioxide Film..." JECS; 147 (4) 2000, pp. 1481-1486.	
	C8	Lim et al., "Gap-fill Performance and Film properties of PMD Films for the 65 nm device Technology", IEEE International Symposium on Semiconductor Manufacturing, Sept 30-Oct. 2, 2003, p.435-438.	
	C9	MEEKS et al., "Modeling of SiO 2 deposition in high density plasma reactors and comparisons of model predictions with experimental measurements," J. Vac. Sci. Technol. A, 16(2):544-563 (1998).	
	C10	Nag et al., "Comparative Evaluation of gap- fill dielectrics in shallow trench isolation for sub-0.25 micron Technologies" IEDM 1996, . 841-844.	
	C11	Pai, "High quality voids free oxide deposition", Materials Chemistry and Physics, 44, 1996, pp. 1-8.	
	C12	Pankov et al., "The effect of hydrogen addition on the fluorine doping level of SiO2 films prepared by remote plasma enhanced chemical vapor deposition using SiF4-based plasmas", Japanese Journal of Applied Physics part 1,37 (11) November 1998, pp. 6135-6141.	
	C13	Peters, "Choices and challenges for shallow trench isolation", Semiconductor International, April 1999, pp. 69-76.	
	C14	Takahashi et al., "The Effect of Gas-phase additives C2H4, C2H6 and C2H2 on SiH4/O2 chemical vapor deposition". Journal of the Electrochemical Society, 143 (4) April 1996, pp. 1355-1361.	
IA	C15	Takeishi et al., "Fluorocarbon films deposited by PECVD with..." DUMIC 1996, pp. 71-77.	

Examiner Signature		Date Considered	1/3/05
--------------------	---	-----------------	--------

EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

¹ Applicant's unique citation designation number (optional). ² Applicant is to place a check mark here if English language Translation is attached.

Substitute for form 1449B/PTO				Complete if Known	
INFORMATION DISCLOSURE STATEMENT BY APPLICANT				Application Number	10/655,230
(use as many sheets as necessary)				Filing Date	September 3, 2003
				First Named Inventor	Karim, M. Ziaul
				Art Unit	1762 <i>2825</i>
				Examiner Name	Unassigned <i>J. ANYA</i>
Sheet	4	of	4	Attorney Docket Number	A8313/T51200

NON PATENT LITERATURE DOCUMENTS			
Examiner Initials *	Cite No. ¹	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published.	T ²
<i>JK</i>	C16	Vassiliev et al., "Properties and Gap-Fill Capability of HPD-CVD Phosphosilicate Glass Films for Subquarter-Micrometer ULSI Device Technology" <i>Electrochemical and Solid-State Letters</i> 3 (2), 2000, pp. 80-83.	
	C17	Vassiliev, "Void-free pre-metal dielectric gap- fill capability with CVD films for subquarter-micron ULSI" <i>DUMIC</i> , Feb. 28-29,2000, pp. 121-132.	
	C18	Xia et al., "High aspect ratio trench filling sing two-step..." <i>JECS</i> , 146 (5),1999, p. 1884-1888.	
	C19	Xia et al., "High Temperature Subatmospheric Chemical Vapor Deposited Undoped Silicate Glass," <i>JECS</i> 146 (3) 1999, pp. 1181-1185.	
	C20	Yota et al., "Advanced passivation layer using high-density plasma CVD oxide for 0.25 micron CMOS Technology" <i>DUMIC</i> , Feb 16-17, 1998,pp. 185-192.	
<i>JK</i>	C21	Yota et al., "Extendibility of ICP high-density plasma CVD for use as intermetal dielectric and passivation layers for 0.18 micron technology," <i>DUMIC</i> Feb. 8-9, 1999, pp. 71-82.	
	C22		

Examiner Signature	<i>Anyas</i>	Date Considered	<i>1/2/05</i>
--------------------	--------------	-----------------	---------------

EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

¹ Applicant's unique citation designation number (optional). ² Applicant is to place a check mark here if English language Translation is attached.

**INVENTION DISCLOSURE
STATEMENT BY APPLICANT**

(use as many sheets as necessary)

Sheet

1

of 3

10/655,230

Filing Date 10-05-2000

First Named Inventor Karim, M. Ziaul

Art Unit Unassigned 2825

Examiner Name Unassigned I. ANYA

Attorney Docket Number A8313/T51200

U.S. PATENT DOCUMENTS+

Examiner Initials*	Cite No. ¹	Document Number Number Kind Code ² (if known)	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear
<i>IA</i>	A1	US-4,690,746	09-01-1987	McInerney et al.	
	A2	US-4,737,379	04-12-1988	Hudgens et al.	
	A3	US-4,835,005	05-30-1989	Hirooka et al.	
	A4	US-4,872,947	10-10-1989	Wang et al.	
	A5	US-4,890,575	01-02-1990	Ito et al.	
	A6	US-4,892,753	01-09-1990	Wang et al.	
	A7	US-4,960,488	10-02-1990	Law et al.	
	A8	US-5,000,113	03-19-1991	Wang et al.	
	A9	US-5,089,442	02-18-1992	Olmer	
	A10	US-5,156,881	10-20-1992	Okano et al.	
	A11	US-5,271,972	12-21-1993	Kwok et al.	
	A12	US-5,275,977	01-04-1994	Otsubo et al.	
	A13	US-5,279,865	01-18-1994	Chebi et al.	
	A14	US-5,302,233	04-12-1994	Kim et al.	
	A15	US-5,319,247	06-07-1994	Matsuura	
	A16	US-5,362,526	11-08-1994	Wang et al.	
	A17	US-5,416,048	05-16-1995	Blalock et al.	
	A18	US-5,468,342	11-21-1995	Nulty et al.	
	A19	US-5,571,576	11-05-1996	Qian et al.	
	A20	US-5,599,740	02-04-1997	Jang et al.	
	A21	US-5,624,582	04-29-1997	Cain	
	A22	US-5,645,645	07-08-1997	Zhang et al.	
	A23	US-5,679,606	10-21-1997	Wang et al.	
	A24	US-5,712,185	01-27-1998	Tsai et al.	
	A25	US-5,719,085	02-17-1998	Moon et al.	
	A26	US-5,804,259	09-08-1998	Robles	
	A27	US-5,850,105	12-15-1998	Dawson et al.	
	A28	US-5,858,876	01-12-1999	Chew	
	A29	US-5,872,052	02-16-1999	Iyer	
	A30	US-5,872,058	02-16-1999	Van Cleemput et al.	
	A31	US-5,910,342	06-08-1999	Hirooka et al.	
	A32	US-5,913,140	06-15-1999	Roche et al.	
	A33	US-5,915,190	06-22-1999	Pirkle	
	A34	US-5,937,323	08-10-1999	Orczyk et al.	
	A35	US-5,953,635	09-14-1999	Andideh	
	A36	US-5,968,610	10-19-1999	Liu et al.	
	A37	US-5,976,327	11-02-1999	Tanaka	
	A38	US-5,990,013	11-23-1999	Berenguer et al.	
	A39	US-5,990,000	11-23-1999	Hong et al.	
	A40	US-6,013,191	01-11-2000	Nasser-Faili et al.	
<i>IA</i>	A41	US-6,013,584	01-11-2000	MSaad	

Examiner Signature

Ray G

Date Considered

1/3/05

*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant. ¹ Applicant's unique citation designation number (optional). ² Kind Codes of U.S. Patent Documents at www.uspto.gov or MPEP 904.04. ³ Enter Office that issued the document, by the two-letter code (WIPO Standard ST.3). ⁴ For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. ⁵ Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST. 16 if possible. ⁶ Applicant is to place a check mark here if English language Translation is attached.

60045306 v1

INFORMATION DISCLOSURE STATEMENT BY APPLICANT <small>(use as many sheets as necessary)</small>			10/655, 230	
			Filing Date	09-03-2003
			First Named Inventor	Karim, M. Ziaul
			Art Unit	Unassigned 2825
Examiner Name	Unassigned T. A. NYAT			
Sheet	2	of	3	Attorney Docket Number
			A8313/T51200	

U.S. PATENT DOCUMENTS+				
Examiner Initials*	Cite No. ¹	Document Number Number Kind Code ² (if known)	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document
TA	A42	US-6,030,881	02-29-2000	Papasouliotis et al.
	A43	US-6,037,018	03-14-2000	Jang et al.
	A44	US-6,039,851	03-21-2000	Iyer
	A45	US-6,059,643	05-09-2000	Hu et al.
	A46	US-6,136,685	10-24-2000	Narwankar et al.
	A47	US-6,167,834 B1	01-02-2001	Wang et al.
	A48	US-6,170,428 B1	01-09-2001	Redeker et al.
	A49	US-6,182,602 B1	02-06-2001	Redeker et al.
	A50	US-6,189,483 B1	02-20-2001	Ishikawa et al.
	A51	US-6,191,026 B1	02-20-2001	Rana et al.
	A52	US-6,203,863 B1	03-20-2-01	Liu et al.
	A53	US-6,194,038 B1	02-27-2001	Roszman
	A54	US-6,197,705 B1	03-06-2001	Vassiliev
	A55	US-6,217,658 B1	04-17-2001	Orczyk et al.
	A56	US-6,228,751 B1	05-08-2001	Yamazaki et al.
	A57	US-6,313,010 B1	11-06-2001	Nag et al.
	A58	US-6,335,288 B1	01-01-2002	Kwan et al.
	A59	US-6,395,150 B1	05-28-2002	Van Cleemput et al.
	A60	US 2002-0187655 A1	12-12-2002	Tan
	A61	US-6,503,843 B1	01-07-2003	Xia et al.
TA	A62	US-6,596,654 B1	07-22-2003	Bayman et al.

FOREIGN PATENT DOCUMENTS						
Examiner Initials*	Cite No. ¹	Foreign Patent Document		Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear
		Country Code ³	Number ⁴	Kind Code ⁵ (if known)		
TA	B1	JP	7-161703	A	06-23-1995	Abstract only
	B2	JP	2058836	A	02-28-1990	Abstract only
TA	B3	GB	2 267 291		12-01-1993	

Examiner Signature		Date Considered	1/3/05
--------------------	---	-----------------	--------

¹EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant. ² Applicant's unique citation designation number (optional). ³ Kind Codes of U.S. Patent Documents at www.uspto.gov or MPEP 901.04. Enter Office that issued the document, by the two-letter code (WIPO Standard ST.3). ⁴ For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. ⁵ Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST. 16 if possible. ⁶ Applicant is to place a check mark here if English language Translation is attached.

Substitute for form 1449B/PTO

INFORMATION DISCLOSURE
STATEMENT BY APPLICANT

(use as many sheets as necessary)

Sheet

of

3

C mplete if Known	
Application Number	Unassigned 10/655,230
Filing Date	09/03/2003
First Named Inventor	Karim, M. Ziaul
Art Unit	Unassigned 2825
Examiner Name	Unassigned L. AHYAT
Attorney Docket Number	A8313/T51200

NON PATENT LITERATURE DOCUMENTS

Examiner Initials *	Cite No. ¹	include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published.	T ²
TA	C1	ABRAHAM, "Reactive Facet Tapering of Plasma Oxide For Multilevel Interconnect Applications," VMIC Conference, pgs. 115-121 (1987).	
	C2	LEE et al., "Dielectric Planarization Techniques For Narrow Pitch Multilevel Interconnects," VMIC Conference, pgs. 85-92 (1987).	
	C3	MUSAKA, "Single Step Gap Filling Technology fo Subhalf Micron Metal Spacings on Plasma Enhanced TEOS/O2 Chemical Vapor Deposition System," International Conference on Solid State Devices and Materials pgs. 510-512, held in Japan, (1993).	
	C4	NALWA, H.S., Handbook of Low and High Dielectric Constant Materials and Their Applications, vol. 1, page 66 (1999).	
	C5	NGUYEN, s.v., "High-Density Plasma Chemical Vapor Deposition of Silicon-Based Dielectric Films for Integrated Circuits," Journal of Research and Development, vol. 43, 1/2 (1999).	
	C6	QIAN et al., "High Density Plasma Deposition and Deep Submicron Gap Fill with Low Dielectric Constant SiOF Films," DUMIC Conference, pgs. 50-56, held in California (1995).	
TA	C7	VASSILIEUV et al., "Trends in void-free pre-metal CVD dielectrics," <u>Solid State Technology</u> , 2001, pgs. 129-136, www.solid-state.com.	

Examiner
SignatureDate
Considered

1/3/05

EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

¹Applicant's unique citation designation number (optional). ²Applicant is to place a check mark here if English language Translation is attached.